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SECOND-YEAR REPORT ON AN EVALUATIVE STUDY OF PREKINDERGARTEN PROGRAMS FOR EDUCATIONALLY DISADVANTAGED CHILDREN.

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PREKINDERGARTENS IN 8 NEW YORK STATE SCHOOL SYSTEMS WERE EVALUATED TO FIND OUT IF THE CHILDREN INVOLVED SHOWED INCREASED CAPACITY TO LEARN, AND IMPROVEMENT IN LANGUAGE AND COGNITIVE SKILLS. 1010 DISADVANTAGED AND 225 NONDISADVANTAGED SUBJECTS WERE RANDOMLY ASSIGNED TO EXPERIMENTAL AND CONTROL GROUPS AND PRE- AND POST-TESTED WITH THE STANFORD-BINET AND THE PEABODY PICTURE VOCABULARY TEST. AT THE END OF THE PREKINDERGARTEN YEARS THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES WAS GIVEN, AND LATE IN THE KINDERGARTEN YEAR THE METROPOLITAN READINESS TESTS WERE USED TO SEE IF GAINS OBTAINED DURING PREKINDERGARTEN WERE SUSTAINED OR INCREASED. THE GENERAL CURRICULUM IN ALL PROGRAMS WAS THE SAME, BUT CERTAIN ACTIVITIES WERE ADDED TO SELECTED CLASSES. CHILDREN WHO WERE GIVEN READING READINESS INSTRUCTION OR LANGUAGE TRAINING SHOWED THE GREATEST GAINS. IMPLICATIONS ARE THAT THE MOST EFFECTIVE PREKINDERGARTEN PROGRAMS ARE THOSE WHOSE CONTENT IS DESIGNED TO DEVELOP COGNITIVE ACTIVITIES EFFECTIVE IN INCREASING LEARNING CAPACITIES. IT ALSO APPEARS THAT PREKINDERGARTEN EFFECTS WILL BE MOST LASTING IF SPECIAL PROGRAMMING FOR THE DISADVANTAGED IS CONTINUED INTO THE PRIMARY GRADES. THIS PAPER WAS PRESENTED AT THE 1967 ANNUAL CONVOCATION OF THE EDUCATIONAL RESEARCH ASSOCIATION OF NEW YORK STATE, NOVEMBER 14, 1967. (MS)

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SECOND-YEAR REPORT ON AN EVALUATIVE STUDY OF PREKINDERGARTEN PROGRAMS FOR EDUCATIONALLY DISADVANTAGED CHILDREN

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PS000348

Paper presented at the 1967 Annual Convocation of the
Educational Research Association of New York State
November 14, 1967

Introduction

Within the past two and a half years prekindergarten programs for the disadvantaged have become a major focus of attention for the nation as a whole and for education in particular.

With all the interest in and enthusiasm for preschool, there is only meager evaluative material on which to base immediate program plans or long-range policies. This report stems from one effort to provide empirical foundations for decision-making in this area.

The Evaluative Study of Prekindergarten Programs for Educationally Disadvantaged Children here reported is a multidistrict project involving eight New York State school systems* and the State Education Department. It receives support from the State's Five Million Fund for Experimental Prekindergarten Programs and from the U.S. Office of Education. The four-year project, started in 1965, is designed to determine the effectiveness of prekindergarten programs for the disadvantaged on a longitudinal basis by following three successive waves of children into kindergarten, first, and second grades. Effectiveness is defined in terms of five goals for the prekindergarten:

(1) Increased capacity to learn
(2) Greater language development
(3) Better self-concept
(4) Increased motor development
(5) More positive attitudes toward school.

This second-year report covers data on two waves of prekindergarten children and follow-up findings for Wave I with respect to the first goal.

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*Cortland, Greenburgh #8, Hempstead, Long Beach, Mount Vernon, Schenectady, Spring Valley, and Yonkers.

Subjects and Programs

The project population for the first two years totals 1,235. Of these, 225 were nondisadvantaged subjects concentrated in two districts that considered association with children of different socioeconomic background an essential part of a program for the disadvantaged.

The chief criterion for the identification of disadvantaged and nondisadvantaged children was the father's occupational rating on the Warner Scale. When there was no father in the home, the mother's occupation or the general economic status of the family was the index used. Children were screened by school district personnel, pretested with the Stanford-Binet and the Peabody Picture Vocabulary Test, and randomly assigned to experimental and control groups in each district by the research staff in the State Education Department.

While the eight districts participating in the study agreed on the goals of the prekindergarten as outlined, each has been free to choose and develop its own curriculum. An effort has been made to encourage activities that will foster language and cognitive development as it is in these areas that the disadvantaged have been found to differ so markedly from their middle-class peers. The assumptions are that a major purpose of early education for the disadvantaged is to offset deficiencies which cause failure in school and that language and cognitive skills are crucial to academic achievement.

The programs in the eight districts have much in common. With one exception, they operate on a half-day schedule. The two and a half hour sessions include free play, snack times, outdoor play, rest periods, and group activities with games, listening to stories, singing, and dancing.

Group activities may also include identifying colors, naming the days of the week, and similar exercises. There are distinct additions to this basic curriculum in three of the districts. In Schenectady, the children in two classes are given individual work with reading readiness materials and go on to preprimers and primers as they are able. In Cortland, which entered the study in the second year, half of the children use the Language Pattern Drills of Bereiter and Engelmann while the others participate in small-group discussions planned to build language skills. In Mount Vernon, where half of the children come to school in very small groups for only an hour a day, the program has included brief but regular exposure to the Edison Responsive Environment Machine, the "talking typewriter." The balance of the program in Mount Vernon may be best described as "modified Montessori."

Evaluative Procedures

The Stanford-Binet and the Peabody Picture Vocabulary Test, administered when the population was identified, were given again at the end of the prekindergarten years, along with the Illinois Test of Psycholinguistic Abilities, to determine the effect of the preschool experience on capacity to learn and language development. The Metropolitan Readiness Tests were administered to Wave I children in the late spring of their kindergarten year to determine the effect of prekindergarten after one year. All testing was done by teams of examiners visiting the several districts.

In the analysis of the test results, group means were used for pretest-posttest comparisons and for comparisons by treatment, socioeconomic status, district, sex, and race. ITPA results were adjusted using the Stanford-Binet pretest as a covariate. Scores on the Metropolitan Readiness Tests were analyzed twice, first with the pretest and then

with the posttest results on the Stanford-Binet and the PPVT as covariates. This procedure makes possible a distinction between the influence of the prekindergarten and the kindergarten experience on readiness.

Findings

The results of the statistical analyses have been summarized in four sets of tables, one for each of the tests given.

The following observations and generalizations are derived from the three sets of tables for the Wave I and Wave II children. They answer these basic questions: Was the prekindergarten experience effective for disadvantaged children, what type of program was most effective, and was the prekindergarten experience equally effective for males and females, whites and nonwhites?

1. The prekindergarten experience was beneficial for the disadvantaged as indicated by significant differences between experimental and control children on the Stanford-Binet, the PPVT, and the ITPA.

2. The most effective prekindergarten programs were those with the most specific and structured cognitive activities. This is demonstrated most clearly by the Schenectady program which produced the greatest number of significant differences in the two-year period. It is substantiated by Cortland which, in its one year of participation, produced the greatest gain and the largest differential between experimentals and controls on the Stanford-Binet.

   The Mt. Vernon ERE machine program was not effective,* nor were those programs stressing the interaction of disadvantaged and nondisadvantaged children.

3. The data on the effectiveness of the prekindergarten experience for boys versus girls is conflicting. The Wave I males benefited to a greater extent than did the females. The Wave II females, on the other hand, profited more than did the males. A tentative hypothesis to explain this shift would take into account the increased emphasis on language development in the second year and the generally recognized superiority of girls on verbal aptitude.

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* The use of the ERE machine has since been discontinued.

4. Finally, the prekindergarten experience was more effective for disadvantaged whites than for disadvantaged nonwhites, although, as a result of prekindergarten, both experimental groups were significantly different from their control counterparts.

The analyses of the Metropolitan Readiness data for the first wave of subjects provide answers to two basic questions: Were differences at the end of prekindergarten sustained in kindergarten, and did the kindergarten build upon any differences produced by the preschool experience? The second question recognizes that groups of varying ability on an initial measure usually differ more as time passes. Having established by the previous analyses that the disadvantaged experimental and control subjects were different groups at the outset of kindergarten, it is appropriate to ask if the gap between them was increased.

1. The difference resulting from prekindergarten was maintained for the disadvantaged group as a whole, but there was no further differentiation between experimental and control children. In the words of the questions, the kindergarten experience sustained the benefits of the prekindergarten but did not build upon them.

2. The first generalization holds true for Schenectady which produced the most significant differences between experimentals and controls at the end of the prekindergarten years. In Schenectady the difference was maintained, but there was no further differentiation.

3. The advantage achieved by the Wave I experimental males was not maintained. The readiness scores of the experimental females, however, were significantly higher than those of their controls. The two covariance analyses show that this difference was due to the girls' experience in prekindergarten and not to the kindergarten program. There is also evidence of an interaction between sex and the kindergarten curriculum that makes for a distinct differentiation between boys and girls whether or not they have attended prekindergarten.

4. White experimental children maintained the advantage found at the end of prekindergarten but did not show any additional benefits from the kindergarten experience. Nonwhite experimental children, on the other hand, did not maintain the advantage over their controls and are significantly different from white experimentals on readiness at the end of kindergarten. This contrast suggests that programs of longitudinal effectiveness for nonwhites have not been devised or that disadvantaged nonwhites more than whites require the continuance of special programming to counteract the adverse circumstances from which they come.

The generalizations that have been made are based on only a limited portion of a long-range study. However, two implications seem clear. First, much more attention should be given to the content of the prekindergarten program, especially to the development and evaluation of cognitive activities which now appear to be most effective in increasing capacity to learn. Second, the provision of special programming for the disadvantaged must be carried forward; modifications in kindergarten and the early grades will probably be necessary if prekindergarten is to have lasting value.

EVALUATIVE STUDY OF PREKINDERGARTEN PROGRAMS

FOR EDUCATIONALLY DISADVANTAGED CHILDREN

RECEIVED

FEB 12 1968

TEST RESULTS

1. Stanford-Binet Intelligence Scale
2. Peabody Picture Vocabulary Test
3. Illinois Test of Psycholinguistic Abilities
4. Metropolitan Readiness Tests

Office of Research and Evaluation

New York State Education Department

November 1967

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Evaluative Study of Prekindergarten Programs

for Educationally Disadvantaged Children

STANFORD-BINET INTELLIGENCE SCALE RESULTS

Analysis of Pre-Post-Test Scores

for Two Waves of Prekindergarten Children

WAVE I 1965-66

WAVE II 1966-67

Office of Research and Evaluation

New York State Education Department

November 1967

TABLE I

Stanford-Binet I.Q. Changes
of Prekindergarten Children
by Socioeconomic Status and Treatment

A.	WAVE I 1965-66			
	Disadvantaged		Non-Disadvantaged	
	Exp. N=245	Con. N=217	Exp. N=53	Con. N=54
Prestest $\bar{X}$	90.97	90.75	105.98	106.69
Posttest $\bar{X}$	90.07	88.20	105.19	105.91
Change	-.90	-2.55*	-.79	-.78
Difference	1.65**		.01	

B.	WAVE II 1966-67			
	Disadvantaged		Non-Disadvantaged	
	Exp. N=322	Con. N=215	Exp. N=82	Con. N=46
Pretest $\bar{X}$	92.66	90.97	104.27	105.70
Posttest $\bar{X}$	96.71	90.01	109.28	106.59
Change	4.05*	-0.96	5.01*	0.89
Difference	5.01*		4.12**	

*Significant at .05 level
**Significant at .1 level

TABLE II

Stanford-Binet I.Q. Changes of
Disadvantaged Prekindergarten Children
Leveled by Type of Program; District, and Treatment

A. WAVE I 1965-66

	E.R.E.		HETEROGENEOUS				HOMOGENEOUS							
	Mt. Vernon		Greenburgh		Hempstead		Long Beach		Schenectady		Sp. Valley		Yonkers	
	Exp. N=49	Con. N=37	Exp. N=30	Con. N=29	Exp. N=36	Con. N=29	Exp. N=24	Con. N=28	Exp. N=41	Con. N=53	Exp. N=32	Con. N=21	Exp. N=44	Con. N=33
Pretest $\bar{X}$	91.35	88.51	90.40	95.07	89.67	92.76	93.67	94.71	90.34	88.81	90.47	86.76	93.64	92.15
Posttest $\bar{X}$	89.47	86.73	86.00	94.66	88.64	88.90	93.46	92.71	91.80	85.77	86.91	83.71	95.70	90.21
Change	-1.88	-1.78	-4.40*	-0.41	-1.03	-3.86*	-0.21	-2.00	1.46	-3.04*	-3.56**	-3.05	2.06	-1.94
Diff.	0.10		3.99		2.83		1.79		4.50*		0.51		4.00	

B. WAVE II 1966-67

	E.R.E.		HETEROGENEOUS				HOMOGENEOUS										PATTERN DRILL	
	Mt. Vernon		Greenburgh		Hempstead		Long Beach		Schenectady		Sp. Valley		Yonkers		Cortland		Cortland	
	Exp. N=48	Con. N=23	Exp. N=33	Con. N=16	Exp. N=55	Con. N=23	Exp. N=28	Con. N=29	Exp. N=41	Con. N=38	Exp. N=27	Con. N=24	Exp. N=48	Con. N=43	Exp. N=19	Con. N=19	Exp. N=23	Con. N=19
Pretest $\bar{X}$	95.54	93.22	96.79	97.63	91.80	87.22	87.29	86.59	93.83	92.92	90.56	91.04	92.50	90.16	87.26	91.74	94.48	91.74
Posttest $\bar{X}$	97.17	91.96	99.15	96.44	93.33	87.22	86.86	86.52	98.34	89.05	96.52	89.54	99.08	90.86	97.95	91.53	103.61	91.53
Change	1.63	-1.26	2.36	-1.19	1.53	0.00	-0.43	-0.07	4.51*	-3.87*	5.96*	-1.50	6.58*	0.70	10.69*	-0.21	9.13*	-0.21
Diff.	2.89		3.55		1.53		0.36		8.38*		7.46*		5.88*		10.90*		9.34*	

*Significant at .05 level
**Significant at .1 level

TABLE III

Stanford-Binet I.Q. Changes of
Disadvantaged Prekindergarten Children
by Treatment and Sex

A.	WAVE I 1965-66			
	Experimental		Control	
	I	II	III	IV
	Male N=123	Female N=122	Male N=109	Female N=108
Pretest $\bar{X}$	90.10	91.85	88.92	92.74
Posttest $\bar{X}$	90.34	89.86	86.61	90.11
Change	0.24	-1.99*	-2.31*	-2.63*
Difference	2.23		0.32	
Diff. I-III	2.55**			
Diff. II-IV	0.64			

B.	WAVE II 1966-67			
	Experimental		Control	
	I	II	III	IV
	Male N=158	Female N=164	Male N=109	Female N=106
Pretest $\bar{X}$	91.85	93.43	90.52	91.43
Posttest $\bar{X}$	94.73	98.60	89.18	90.86
Change	2.88*	5.17*	-1.34	-0.57
Difference	2.29**		0.77	
Diff. I-III	4.22*			
Diff. II-IV	5.74*			

*Significant at .05 level
**Significant at .1 level

TABLE IV

Stanford-Binet I.Q. Changes of
Disadvantaged Prekindergarten Children
by Treatment and Race

A.	WAVE I 1965-66			
	Experimental		Control	
	I	II	III	IV
	Non-White N=159	White N=86	Non-White N=121	White N=96
Pretest $\bar{X}$	88.82	94.95	87.79	94.59
Posttest $\bar{X}$	87.41	95.08	85.20	92.28
Change	-1.41	0.13	-2.59*	-2.31*
Difference	1.54		0.28	
Diff. I-III	1.18			
Diff. II-IV	2.44			

B.	WAVE II 1966-67			
	Experimental		Control	
	I	II	III	IV
	Non-White N=167	White N=155	Non-White N=107	White N=108
Pretest $\bar{X}$	90.54	94.94	87.22	94.69
Posttest $\bar{X}$	91.99	101.79	85.45	94.53
Change	1.45**	6.85*	-1.77**	-0.16
Difference	5.40*		1.61	
Diff. I-III	3.22*			
Diff. II-IV	7.01*			

*Significant at .05 level
**Significant at .1 level

TABLE V

Stanford-Binet I.Q. Changes of Disadvantaged Prekindergarten Children by Treatment, Race, and Sex

A. WAVE I 1965-66

	Experimental				Control			
	I	II	III	IV	V	VI	VII	VIII
	Non-White Male N=76	White Male N=47	Non-White Female N=83	White Female N=39	Non-White Male N=60	White Male N=49	Non-White Female N=61	White Female N=47
Pretest $\bar{X}$	87.35	94.53	90.16	95.46	85.13	93.55	90.41	95.63
Posttest $\bar{X}$	86.58	96.43	88.17	93.46	83.77	90.08	86.61	94.47
Change	-0.77	1.90	-1.99	-2.00	-1.36	-3.47*	-3.80*	-1.16
Difference	2.67		0.01		2.11		2.64	
Diff. I-V	0.59							
Diff. II-VI	5.37*							
Diff. III-VII	1.81							
Diff. IV-VIII	0.84							

B. WAVE II 1966-67

	Experimental				Control			
	I	II	III	IV	V	VI	VII	VIII
	Non-White Male N=77	White Male N=81	Non-White Female N=90	White Female N=74	Non-White Male N=47	White Male N=62	Non-White Female N=60	White Female N=46
Pretest $\bar{X}$	89.62	93.98	91.32	96.00	85.49	94.34	88.57	95.17
Posttest $\bar{X}$	90.26	98.99	93.47	104.85	82.57	94.19	87.70	94.98
Change	0.64	5.01*	2.15*	8.85*	-2.92**	-0.15	-0.87	-0.19
Difference	4.37**		6.70*		2.77		0.68	
Diff. I-V	3.56**							
Diff. II-VI	5.16*							
Diff. III-VII	3.02**							
Diff. IV-VIII	9.04*							

*Significant at .05 level
**Significant at .1 level

TABLE VI A

Matrix of Significant Differences Between Mean I.Q. Changes on the Stanford-Binet Intelligence Scale of Prekindergarten Children Leveled by Treatment, Race, Socioeconomic Status, and Sex

WAVE I 1965-66

GROUP	N	MEAN CHANGE	E W D M	E W D F	E W N M	E W N F	E NW D M	E NW D F	E NW N M	E NW N F	C W D M	C W D F	C W N M	C W N F	C NW D M	C NW D F	C NW N M	C NW N F
W D M	47	1.90		**					*		*		*			*		
W D F	39	-2.00							*									
W N M	15	4.40							*				**			**		
W N F	22	-0.78							*									
NW D M	76	-0.77														**		
NW D F	83	-1.99	**						*									
NW N M	10	-9.60																
NW N F	5	1.00							*									
W D M	49	-3.47							**									
W D F	47	-1.41							*									
W N M	19	-5.16																
W N F	26	2.31		**			**	*		*	**	*			*			
NW D M	60	-1.36						*										
NW D F	61	-3.80						**										
NW N M	4	2.75																
NW N F	5	-3.00																

* = A difference at the .05 level of significance in favor of the group listed along the ordinate

** = A difference at the .1 level of significance in favor of the group listed along the ordinate

Code

E = Experimental
C = Control
W = White
NW = Non-White
D = Disadvantaged
N = Nondisadvantaged
M = Male
F = Female

TABLE VI B

Matrix of Significant Differences Between Mean I.Q. Changes on the Stanford-Binet Intelligence Scale of Prekindergarten Children Leveled by Treatment, Race, Socioeconomic Status, and Sex

WAVE II 1966-67

GROUP	N	MEAN CHANGE	E W D M	E W D F	E W N M	E W N F	E NW D M	E NW D F	E NW N M	E NW N F	C W D M	C W D F	C W N M	C W N F	C NW D M	C NW D F	C NW N M	C NW N F
W D M	81	5.01				*	**			*	*			*	*	-	*	
W D F	74	8.85	**			*	*	*	*		*	*	*	*	*	*	-	*
W N M	37	8.84				*	*	*	**		*	*	**	**	*	*	-	*
W N F	24	1.87														-	**	
NW D M	77	0.64												**		-	**	
NW D F	90	2.15												*	**	-	*	
NW N M	10	2.90												*		-	*	
NW N F	11	2.27														-		
W D M	62	-0.15														-		
W D F	46	-0.19														-		
W N M	23	1.61														-	**	
W N F	16	2.81												**		-	**	
NW D M	47	-2.92														-		
NW D F	60	-0.87														-		
NW N M	1	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-		-	
NW N F	6	-7.17														-		

* = A difference at the .05 level of significance in favor of the group listed along the ordinate

** = A difference at the .1 level of significance in favor of the group listed along the ordinate

Code

E = Experimental
C = Control
W = White
NW = Non-White
D = Disadvantaged
N = Nondisadvantaged
M = Male
F = Female

Evaluative Study of Prekindergarten Programs

for Educationally Disadvantaged Children

PEABODY PICTURE VOCABULARY TEST RESULTS

Analysis of Pre-Post-Test Scores

for Two Waves of Prekindergarten Children

WAVE I 1965-66

WAVE II 1966-67

Office of Research and Evaluation

New York State Education Department

November 1967

TABLE I

P.P.V.T. Raw Score Changes
of Prekindergarten Children
by Socioeconomic Status and Treatment

A.	WAVE I 1965-66			
	Disadvantaged		Non-Disadvantaged	
	Exp. N=249	Con. N=214	Exp. N=52	Con. N=55
Pretest $\bar{X}$	30.50	30.01	43.31	42.15
Posttest $\bar{X}$	43.76	41.37	52.77	52.33
Change	13.26*	11.36*	9.46*	10.18*
Difference	1.90*		0 .72	

B.	WAVE II 1966-67			
	Disadvantaged		Non-Disadvantaged	
	Exp. N=320	Con. N=213	Exp. N=81	Con. N=46
Pretest $\bar{X}$	32,43	31,42	44,21	45,54
Posttest $\bar{X}$	43.78	41.35	53.21	54.65
Change	11.35*	9.93*	9.00*	9.11*
Difference	1.42**		0.11	

*Significant at .05 level
**Significant at .1 level

TABLE II

P.P.V.T. Raw Score Changes of
Disadvantaged Prekindergarten Children
Leveled by Type of Program, District, and Treatment

A.	WAVE I 1965-66													
	E.R.E.		HETEROGENEOUS				HOMOGENEOUS							
	Mt. Vernon		Greenburgh		Hempstead		Long Beach		Schenectady		Sp. Valley		Yonkers	
	Exp. N=48	Con. N=37	Exp. N=30	Con. N=28	Exp. N=37	Con. N=29	Exp. N=26	Con. N=28	Exp. N=41	Con. N=52	Exp. N=34	Con. N=21	Exp. N=44	Con. N=32
Pretest $\bar{X}$	27.40	25.16	30.83	33.39	29.95	30.28	31.46	32.21	33.46	32.04	30.44	30.43	31.39	30.25
Posttest $\bar{X}$	41.71	37.30	40.57	45.07	42.16	42.93	43.54	40.93	48.61	41.88	44.12	42.14	45.91	42.66
Change	14.31*	12.14*	9.74*	11.68*	12.21*	12.65*	12.08*	8.72*	15.15*	9.84*	13.68*	11.71*	14.52*	12.41*
Difference	2.17		1.94		0.44		3.36		5.31*		1.97		2.11	

B.	WAVE II 1966-67																PATTERN DRILL	
	E.R.E.		HETEROGENEOUS				HOMOGENEOUS											
	Mt. Vernon		Greenburgh		Hempstead		Long Beach		Schenectady		Sp. Valley		Yonkers		Cortland		Cortland	
	Exp. N=47	Con. N=23	Exp. N=33	Con. N=16	Exp. N=55	Con. N=23	Exp. N=28	Con. N=27	Exp. N=41	Con. N=38	Exp. N=27	Con. N=24	Exp. N=48	Con. N=43	Exp. N=19	Con. N=19	Exp. N=22	Con. N=19
Pretest $\bar{X}$	34.79	33.74	34.06	39.38	33.31	31.26	26.43	25.33	32.15	33.66	34.00	31.75	28.46	27.79	34.16	34.11	36.18	34.11
Posttest $\bar{X}$	44.89	44.57	45.12	47.63	43.71	38.30	38.36	36.37	42.78	44.26	45.04	38.58	43.21	40.39	43.53	42.79	48.23	42.79
Change	10.10*	10.83*	11.06*	8.25*	10.40*	7.04*	11.93*	11.04*	10.63*	10.60*	11.04*	6.83*	14.75*	12.60*	9.37*	8.68*	12.05*	8.68*
Difference	0.73		2.81		3.36**		0.89		0.03		4.21**		2.15		0.69		3.37	

*Significant at .05 level
**Significant at .1 level

TABLE III

P.P.V.T. Raw Score Changes of
Disadvantaged Prekindergarten Children
by Treatment and Sex

A.	WAVE I 1965-66			
	Experimental		Control	
	I	II	III	IV
	Male N=125	Female N=124	Male N=109	Female N=105
Pretest $\bar{X}$	30.42	30.51	29.10	31.06
Posttest $\bar{X}$	45.13	42.42	42.44	40.35
Change	14.71*	11.91*	13.34*	9.29*
Difference	2.80*		4.05*	
Diff. I-III	1.37			
Diff. II-IV	2.62*			

B.	WAVE II 1966-67			
	Experimental		Control	
	I	II	III	IV
	Male N=156	Female N=164	Male N=109	Female N=104
Pretest $\bar{X}$	32.94	31.95	32.04	30.78
Posttest $\bar{X}$	44.12	43.46	42.39	40.27
Change	11.18*	11.51*	10.35*	9.49*
Difference	0.33		0.86	
Diff. I-III	0.83			
Diff. II-IV	2.02**			

*Significant at .05 level
**Significant at .1 level

TABLE IV

P.P.V.T. Raw Score Changes of
Disadvantaged Prekindergarten Children
by Treatment and Race

A.	WAVE I 1965-66			
	Experimental		Control	
	I	II	III	IV
	Non-White N=163	White N= 86	Non-White N=120	White N= 94
Pretest $\bar{X}$	27.58	35.92	27.40	33.46
Posttest $\bar{X}$	40.99	49.07	39.00	44.50
Change	13.41*	13.15*	11.60*	11.04*
Difference	0.26		0.56	
Diff. I-III	1.81**			
Diff. II-IV		2.11**		

WAVE II 1966-67				
	Experimental		Control	
	I	II	III	IV
	Non-White N= 166	White N= 154	Non-White N= 105	White N= 108
Pretest $\bar{X}$	28.81	36.34	26.71	36.00
Posttest $\bar{X}$	40.41	47.41	36.50	46.06
Change	11.60*	11.07*	9.79*	10.06*
Difference	0.53		0.27	
Diff. I-III	1.81			
Diff. II-IV		1.01		

*Significant at .05 level
**Significant at .1 level

TABLE V

P.P.V.T. Raw Score Changes of
Disadvantaged Prekindergarten Children
by Treatment, Race, and Sex

A. WAVE I 1965-66

	Experimental				Control			
	I	II	III	IV	V	VI	VII	VIII
	Non-White Male N= 78	White Male N=47	Non-White Female N= 85	White Female N= 39	Non-White Male N=60	White Male N= 49	Non-White Female N= 60	White Female N= 45
Pretest $\bar{X}$	26.69	36.60	28.40	35.10	25.93	32.98	28.87	33.98
Posttest $\bar{X}$	41.27	51.53	40.73	46.10	40.33	45.02	37.67	43.93
Change	14.58*	14.93*	12.33*	11.00*	14.40*	12.04*	8.80*	9.95*
Difference	0.35		1.33		2.36		1.15	

Diff. I-V 0.18

Diff. II-VI 2.89**

Diff. III-VII 3.53*

Diff. IV-VIII 1.05

B. WAVE II 1966-67

	Experimental				Control			
	I	II	III	IV	V	VI	VII	VIII
	Non-White Male N=76	White Male N=80	Non-White Female N=90	White Female N=74	Non-White Male N=47	White Male N=62	Non-White Female N=58	White Female N=46
Pretest $\bar{X}$	28.70	36.96	28.90	35.66	27.55	35.44	26.03	36.76
Posttest $\bar{X}$	40.91	47.16	39.99	47.68	36.87	46.56	36.21	45.39
Change	12.21*	10.20*	11.09*	12.02*	9.32*	11.12*	10.18*	8.63*
Difference	2.01		0.93		1.80		1.55	

Diff. I-V 2.89**

Diff. II-VI 0.92

Diff. III-VII 0.91

Diff. IV-VIII 3.39*

*Significant at .05 level
**Significant at .1 level

TABLE VI A

Matrix of Significant Differences between Mean Raw Score Changes on the Peabody Picture Vocabulary Test of Prekindergarten Children Leveled by Treatment, Race, Socioeconomic Status, and Sex

WAVE I 1965-66

OUP	N	MEAN CHANGE	E W D M	E W D F	E W N M	E W N F	E NW D M	E NW D F	E NW N M	E NW N F	C W D M	C W D F	C W N M	C W N F	C NW D M	C NW D F	C NW N M	C NW N F
D M	47	14.93		*	*	*		**		*	**	*	**	*		*		*
D F	39	11.00								*					**			*
N M	14	10.36																
N F	22	9.40																
D M	78	14.58		*	*	*		**		*	**	*	**	*		*		*
D F	85	12.33				**				*				*		*		*
N M	10	10.40																
N F	6	6.00																
D M	49	12.04								*				**		*		*
D F	45	9.95								**								
N M	19	10.79								**								
N F	26	9.27																
D M	60	14.40		**	**	*				*		*		*		*		*
D F	60	8.80																
N M	4	19.25	*	*	*	*	*	*	*	*	*	*	*	*	*	*		*
N F	6	6.16																

* = A difference at the .05 level of significance in favor of the group listed along the ordinate

** = A difference at the .1 level of significance in favor of the group listed along the ordinate

Code

E = Experimental
C = Control
W = White
NW = Non-White
D = Disadvantaged
N = Nondisadvantaged
M = Male
F = Female

TABLE VI B

Matrix of Significant Differences between Mean Raw Score Changes on the Peabody Picture Vocabulary Test of Prekindergarten Children Leveled by Treatment, Race, Socioeconomic Status, and Sex

WAVE II 1966-67

GROUP	N	MEAN CHANGE	EWDM	EWDF	EWNM	EWNF	ENWDM	ENWDF	ENWNM	ENWNF	CWDM	CWDF	CWNM	CWNF	CNWDM	CNWDF	CNWNM	CNWNF
W D M	80	10.20														-		
W D F	74	12.02			*	**					*	*				-		
W N M	37	7.84														-		
W N F	24	8.63														-		
NW D M	76	12.21			*	*					*	*		**		-		
NW D F	90	11.09			*							**				-		
NW N M	9	10.67														-		
NW N F	11	12.36														-		
W D M	62	11.12			*							**				-		
W D F	46	8.63														-		
W N M	23	7.74														-		
W N F	16	9.00														-		
NW D M	47	9.32														-		
NW D F	58	10.18														-		
NW N M	1	19.00	-	-	-	-	-	-	-	-	-	-	-	-	-		-	
NW N F	6	13.00			*	*					*	*	**	**		-		

* = A difference at the .05 level of significance in favor of the group listed along the ordinate

** = A difference at the .1 level of significance in favor of the group listed along the ordinate

Code

E = Experimental
C = Control
W = White
NW = Non-White
D = Disadvantaged
N = Nondisadvantaged
M = Male
F = Female

Evaluative Study of Prekindergarten Programs for Educationally Disadvantaged Children

ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES

Results for Two Waves of Prekindergarten Children

WAVE I 1965-66

WAVE II 1966-67

Analysis of Covariance on ITPA Scores at End of Prekindergarten with Stanford-Binet Pretest as Covariate

Office of Research and Evaluation

New York State Education Department

November 1967

TABLE I

Comparison of Adjusted Means on the
Illinois Test of Psycholinguistic Abilities
of Prekindergarten Children by
Socioeconomic Status and Treatment

A.	WAVE I 1965-66			
	Disadvantaged		Non-Disadvantaged	
	Exp. N= 243	Con. N= 216	Exp. N= 53	Con. N= 51
Adjusted Mean	57.08	51.88	69.18	67.05
Difference	5.20*		2.13	

B.	WAVE II 1966-67			
	Disadvantaged		Non-Disadvantaged	
	Exp. N=317	Con. N=212	Exp. N=80	Con. N=46
Adjusted Mean	61.54	57.53	70.77	70.18
Difference	4.01*		0.59	

*Significant at .05 level

TABLE II

Comparison of Adjusted Means
on the Illinois Test of Psycholinguistic Abilities
of Disadvantaged Prekindergarten Children
Leveled by Type of Program, District, and Treatment

A. WAVE I 1965-66

	E.R.E.		HETEROGENEOUS				HOMOGENEOUS							
	Mt. Vernon		Greenburgh		Hempstead		Long Beach		Schenectady		Sp. Valley		Yonkers	
	Exp. N=45	Con. N=35	Exp. N=30	Con. N=28	Exp. N=36	Con. N=28	Exp. N=22	Con. N=24	Exp. N=40	Con. N=52	Exp. N=31	Con. N=18	Exp. N=39	Con. N=31
Adjusted Mean	52.66	47.17	54.79	54.80	55.09	50.96	59.19	54.09	61.03	52.45	57.28	52.05	60.01	52.59
Diff.	5.49		0.01		4.13		5.10		8.58*		5.23		7.42*	

B. WAVE II 1966-67

	E.R.E.		HETEROGENEOUS				HOMOGENEOUS										PATTERN DRILL	
	Mt. Vernon		Greenburgh		Hempstead		Long Beach		Schenectady		Sp. Valley		Yonkers		Cortland		Cortland	
	Exp. N=47	Con. N=23	Exp. N=32	Con. N=16	Exp. N=54	Con. N=22	Exp. N=27	Con. N=28	Exp. N=41	Con. N=38	Exp. N=27	Con. N=23	Exp. N=47	Con. N=43	Exp. N=19	Con. N=19	Exp. N=23	Con. N=19
Adjusted Mean	59.19	57.49	57.86	57.82	62.64	56.28	56.46	56.18	59.19	58.17	63.75	56.89	63.87	56.74	68.54	63.45	67.86	63.45
Diff.	1.70		0.04		6.36*		0.28		1.02		6.86*		7.13*		5.09		4.41	

*Significant at .05 level

TABLE III

Comparison of Adjusted Means
on the Illinois Test of Psycholinguistic Abilities
of Disadvantaged Pr kindergarten Children
by Treatment and Sex

A.	WAVE I 1965-66			
	Experimental		Control	
	I	II	III	IV
	Male N=123	Female N=120	Male N=109	Female N=107
Adjusted Mean	57.38	56.77	51.04	52.72
Difference	0.61		1.68	
Diff. I-III	6.34*			
Diff. II-IV			4.05*	

B.	WAVE II 1966-67			
	Experimental		Control	
	I	II	III	IV
	Male N=156	Female N=161	Male N=108	Female N=104
Adjusted Mean	61.66	61.43	56.59	58.50
Difference	0.23		1.91	
Diff. I-III	5.07*			
Diff. II-IV			2.93**	

*Significant at .05 level
**Significant at .1 level

TABLE IV

Comparison of Adjusted Means
on the Illinois Test of Psycholinguistic Abilities
of Disadvantaged Prekindergarten Children
by Treatment and Race

A.	WAVE I 1965-66			
	Experimental		Control	
	I	II	III	IV
	Non-White N=159	White N=84	Non-White N=121	White N=95
Adjusted Mean	54.34	62.28	51.28	52.62
Difference	7.94*		1.34	
Diff. I-III	3.06*			
Diff. II-IV	9.66*			

B.	WAVE II 1966-67			
	Experimental		Control	
	I	II	III	IV
	Non-White N=162	White N=155	Non-White N=104	White N=108
Adjusted Mean	59.51	63.73	53.26	61.54
Difference	4.22*		8.28*	
Diff. I-III	6.25*			
Diff. II-IV	2.19			

*Significant at .05 level

TABLE V

Comparison of Adjusted Means
on the Illinois Test of Psycholinguistic Abilities
of Disadvantaged Prekindergarten Children
by Treatment, Race, and Sex

WAVE I 1965-66

	Experimental				Control			
	I	II	III	IV	V	VI	VII	VIII
	Non-White Male N=76	White Male N=47	Non-White Female N=83	White Female N=37	Non-White Male N=60	White Male N=49	Non-White Female N=61	White Female N=46
Adjusted Mean	55.84	64.20	56.03	64.40	52.60	52.57	53.02	56.69
Difference	8.36*		8.37*		0.03		3.67	

Diff. I-V	3.24
Diff. II-VI	11.63*
Diff. III-VII	3.01
Diff. IV-VIII	7.71*

WAVE II 1966-67

	Experimental				Control			
	I	II	III	IV	V	VI	VII	VIII
	Non-White Male N=75	White Male N=81	Non-White Female N=87	White Female N=74	Non-White Male N=46	White Male N=62	Non-White Female N=58	White Female N=46
Adjusted Mean	60.66	62.56	58.51	65.03	51.57	60.17	54.57	63.41
Difference	1.90		6.52*		8.60*		8.84*	

Diff. I-V	9.09*
Diff. II-VI	2.39
Diff. III-VII	3.94**
Diff. IV-VIII	1.62

*Significant at .05 level
**Significant at .1 level

TABLE VI A

Matrix of Significant Differences Between Adjusted Means
on the Illinois Test of Psycholinguistic Abilities
of Disadvantaged Prekindergarten Children
Leveled by Treatment, Race, and Sex

WAVE I 1965-66

GROUP	N	ADJ. MEAN	E W M	E W F	E NW M	E NW F	C W M	C W F	C NW M	C NW F
E W M	47	64.20			8.36*	8.17*	11.63*	7.51*	11.60*	11.18*
E W F	37	64.40			8.56*	8.37*	11.83*	7.71*	11.80*	11.38*
E NW M	76	55.84								
E NW F	83	56.03								
C W M	49	52.57								
C W F	46	56.69								
C NW M	60	52.60								
C NW F	61	53.02								

* = A difference at the .05 level of significance in favor of the group listed along the ordinate

** = A difference at the .1 level of significance in favor of the group listed along the ordinate

Code

E = Experimental
C = Control

W = White
NW = Non-White

M = Male
F = Female

TABLE VI B

Matrix of Significant Differences Between Adjusted Means
on the Illinois Test of Psycholinguistic Abilities
of Disadvantaged Prekindergarten Children
Leveled by Treatment, Race, and Sex

WAVE II 1966-67

GROUP	N	ADJ. MEAN	E W M	E W F	E NW M	E NW F	C W M	C W F	C NW M	C NW F
E W M	81	62.56				4.05*			10.99*	7.99*
E W F	74	65.03			4.37*	6.52*	4.86*		13.46*	10.46*
E NW M	75	60.66							9.09*	6.09*
E NW F	87	58.51							6.94*	3.94**
C W M	62	60.17							8.60*	5.60*
C W F	46	63.41				4.90*			11.84*	8.84*
C NW M	46	51.57								
C NW F	58	54.57								

* = A difference at the .05 level of significance in favor of the group listed along the ordinate

** = A difference at the .1 level of significance in favor of the group listed along the ordinate

Code

E = Experimental
C = Control

W = White
NW = Non-White

M = Male
F = Female

Evaluative Study of Prekindergarten Programs

for Educationally Disadvantaged Children

METROPOLITAN READINESS TESTS

Analysis of Covariance on Scores of Wave I Children at End of Kindergarten, 1967, with Two Sets of Covariates:

A. Pretest Scores on Stanford-Binet and PPVT

B. Posttest Scores on Stanford-Binet and PPVT

Office of Research and Evaluation

New York State Education Department

November 1967

TABLE I

Comparison of Adjusted Means
on the Metropolitan Readiness Tests
of Wave I Disadvantaged Children
by Socioeconomic Status and Treatment

A. Covariates: S-B and PPVT Pretest Scores				
	Disadvantaged		Non-Disadvantaged	
	Exp. N=195	Con. N=161	Exp. N=34	Con. N=45
Adjusted Mean	44.14	41.40	60.20	61.18
Difference	2.74*		0.98	

B. Covariates: S-B and PPVT Posttest Scores				
	Disadvantaged		Non-Disadvantaged	
	Exp. N=195	Con. N=161	Exp. N=34	Con. N=45
Adjusted Mean	43.43	42.27	60.69	60.81
Difference	1.16		0.12	

*Significant at .05 level

TABLE II

Comparison of Adjusted Means
on the Metropolitan Readiness Tests
of Wave I Disadvantaged Prekindergarten Children
Leveled by Type of Program, District, and Treatment

A. Covariates: S-B and PPVT Pretest Scores

	E.R.E		HETEROGENEOUS				HOMOGENEOUS							
	Mt. Vernon		Greenburgh		Hempstead		Long Beach		Schenectady		Sp. Valley		Yonkers	
	Exp. N=34	Con. N=29	Exp. N=30	Con. N=23	Exp. N=24	Con. N=22	Exp. N=21	Con. N=22	Exp. N=30	Con. N=28	Exp. N=26	Con. N=14	Exp. N=30	Con. N=23
Adjusted Mean	51.45	50.35	42.41	44.06	42.90	34.22	41.78	41.37	42.67	35.54	40.62	41.65	44.43	41.76
Difference	1.10		1.65		8.68*		0.41		7.13*		1.03		2.67	

B. Covariates: S-B and PPVT Posttest Scores

	E.R.E.		HETEROGENEOUS				HOMOGENEOUS							
	Mt. Vernon		Greenburgh		Hempstead		Long Beach		Schenectady		Sp. Valley		Yonkers	
	Exp. N=34	Con. N=29	Exp. N=30	Con. N=23	Exp. N=24	Con. N=22	Exp. N=21	Con. N=22	Exp. N=30	Con. N=28	Exp. N=26	Con. N=14	Exp. N=30	Con. N=23
Adjusted Mean	50.44	50.99	44.47	43.44	42.29	35.13	40.61	42.79	39.91	37.58	41.13	44.32	42.14	41.75
Difference	0.55		1.03		7.16*		2.18		2.33		3.19		0.39	

*Significant at .05 level

TABLE III

Comparison of Adjusted Means
on the Metropolitan Readiness Tests
of Wave I Disadvantaged Prekindergarten Children
by Treatment and Sex

A. Covariates: S-B and PPVT Pretest Scores				
	Experimental		Control	
	I	II	III	IV
	Male N=101	Female N=94	Male N=80	Female N=81
Adjusted Mean	42.67	45.72	40.48	42.30
Difference	3.05**		1.82	
Diff. I-III	2.19			
Diff. II-IV		3.42**		

B. Covariates: S-B and PPVT Posttest Scores				
	Experimental		Control	
	I	II	III	IV
	Male N=101	Female N=94	Male N=80	Female N=81.
Adjusted Mean	41.25	45.70	40.64	43.95
Difference	4.45*		3.31**	
Diff. I-III	0.61			
Diff. II-IV		1.75		

*Significant at .05 level
**Significant at .1 level

TABLE IV

Comparison of Adjusted Means
on the Metropolitan Readiness Tests
of Wave I Disadvantaged Prekindergarten Children
by Treatment and Race

A. Covariates: S-B and PPVT Pretest Scores				
	Experimental		Control	
	I	II	III	IV
	Non-White N=129	White N=66	Non-White N=99	White N=62
Adjusted Mean	43.00	46.58	40.34	42.88
Difference	3.58**		2.54	
Diff. I-III	2.66			
Diff. II-IV			3.70**	

B. Covariates: S-B and PPVT Posttest Scores				
	Experimental		Control	
	I	II	III	IV
	Non-White N=129	White N=66	Non-White N=99	White N=62
Adjusted Mean	42.69	45.01	41.53	43.30
Difference	2.32		1.77	
Diff. I-III	1.16			
Diff. II-IV			1.71	

**Significant at .1 level

TABLE V

Comparison of Adjusted Means
on the Metropolitan Readiness Tests
of Wave I Disadvantaged Prekindergarten Children
by Treatment, Race, and Sex

A. Covariates: S-B and PPVT Pretest Scores

	Experimental				Control			
	I	II	III	IV	V	VI	VII	VIII
	Non-White Male N=63	White Male N=38	Non-White Female N=66	White Female N=28	Non-White Male N=49	White Male N=31	Non-White Female N=50	White Female N=31
Adjusted Mean	41.65	44.50	44.41	48.86	40.39	40.36	40.47	45.34
Difference	2.85		4.45		0.03		4.87**	
Diff. I-V	1.26							
Diff. II-VI		4.14						
Diff. III-VII			3.94**					
Diff. IV-VIII				3.52				

B. Covariates: S-B and PPVT Posttest Scores

	Experimental				Control			
	I	II	III	IV	V	VI	VII	VIII
	Non-White Male N=63	White Male N=38	Non-White Female N=66	White Female N=28	Non-White Male N=49	White Male N=31	Non-White Female N=50	White Female N=31
Adjusted Mean	39.52	43.16	44.65	49.04	38.45	41.22	43.08	48.63
Difference	3.64		4.39		2.77		5.55**	
Diff. I-V	1.07							
Diff. II-VI		1.94						
Diff. III-VII			1.57					
Diff. IV-VIII				0.41				

**Significant at .1 level

TABLE VI A

Matrix of Significant Differences Between Adjusted Means[1]
on the Metropolitan Readiness Tests
of Wave I Disadvantaged Prekindergarten Children
Leveled by Treatment, Race, and Sex

GROUP	N	ADJ. MEAN	E W M	E W F	E NW M	E NW F	C W M	C W F	C NW M	C NW F
E W M	38	44.50								
E W F	28	48.86			7.21*		8.50*		8.47*	8.39*
E NW M	63	41.65								
E NW F	66	44.41							4.02**	3.94**
C W M	31	40.36								
C W F	31	45.34							4.95**	4.87**
C NW M	49	40.39								
C NW F	50	40.47								

* = A difference at the .05 level of significance in favor of the group listed along the ordinate

** = A difference at the .1 level of significance in favor of the group listed along the ordinate

Code

E = Experimental W = White M = Male

C = Control NW = Non-White F = Female

[1]Covariates: S-B and PPVT Pretest Scores

TABLE VI B

Matrix of Significant Differences Between Adjusted Means[1]
on the Metropolitan Readiness Tests
of Wave I Disadvantaged Prekindergarten Children
Leveled by Treatment, Race, and Sex

GROUP	N	ADJ. MEAN	E W M	E W F	E NW M	E NW F	C W M	C W F	C NW M	C NW F
E W M	38	43.16						4.71**		
E W F	28	49.04	5.88**		9.52*		7.82*	10.59*	5.96**	
E NW M	63	39.52								
E NW F	66	44.65			5.13*			6.20*		
C W M	31	41.22								
C W F	31	48.63	5.47**		9.11*		7.41*		10.18*	5.55**
C NW M	49	38.45								
C NW F	50	43.08						4.63**		

* = A difference at the .05 level of significance in favor of the group listed along the ordinate

** = A difference at the .1 level of significance in favor of the group listed along the ordinate

Code

E = Experimental W = White M = Male

C = Control NW = Non-White F = Female

[1]Covariates: S-B and PPVT Posttest Scores